"Newcomer, Crystal"
<cnewcomer@state.pa.us>

05/16/2007 08:42 AM

To "Barron, Thomas" <tbarron@state.pa.us>, Brian Trulear/R3/USEPA/US@EPA

cc "Desai, Sunil V" <sdesai@state.pa.us>, Denise Hakowski/R3/USEPA/US@EPA

bcc

Subject RE: Duncansville WER (square root symbols didn't copy correctly)

Thanks, Tom.  They are anxious to get this permit due to the Pennworks funding.  I think I'll call them and ask them if they want to bother with more sampling or just take this.  Brian, do you have anything to add other than how nice the weather was in VA?

> -----Original Message-----
> From:         Barron, Thomas
> Sent:         Tuesday, May 15, 2007 2:31 PM
> To:           Newcomer, Crystal; 'Trulear.Brian@epamail.epa.gov'
> Cc:           Desai, Sunil V; 'Denise P. Hakowski'
> Subject:      RE: Duncansville WER (square root symbols didn't copy correctly)
>
> Thank you, Crystal.
>
> I have entered a few notes below, but basically I agree.  Yes, something is fishy with the May results; or at least the way they are presented - are the results/samples possibly reversed during this run?  Something Floyd is trying to argue at USADA this week in Calif.  Anyway, I would suggest they conduct another set of tests so they have 2 (confirmed) valid tests to work from.
>
> Please contact me if you have any questions or if you wish to discuss any of this in more detail.
>
> Thanks!
> Thomas A. Barron , Chief
> Standards Section
> Div. of Water Quality Standards
> Bureau of Water Standards & Facility Regulation
> Ph: 717-787-9614     -     FAX: 717-772-3249
>
> P.S. Please note that my email address is tbarron@state.pa.us
>
> + + + + + + CONFIDENTIALITY   NOTICE + + + + + + The information contained in this email may be confidential and/or privileged. This email is intended to be reviewed by only the individual(s) or organization(s) named above. If you are not the intended recipient or an authorized representative of the intended recipient, you are hereby notified that any review, dissemination or copying of this email and/or its attachments, if any, or any other information and/or reference(s) contained herein, is prohibited. If you have received this email in error, please immediately notify the sender by return email and delete this email from your system.
>                -----Original Message-----
>         From:           Newcomer, Crystal
>         Sent:           Tuesday, May 15, 2007 1:21 PM
>         To:             Barron, Thomas; 'Trulear.Brian@epamail.epa.gov'
>         Cc:             Desai, Sunil V; 'Denise P. Hakowski'
>         Subject:        RE: Duncansville WER (square root symbols didn't copy correctly)
>
>         Brian, I have redone most of the Duncanville WER as described below.  Since Chapter 16 has dissolved Cu, I used Duncansville> '> s dissolved results, which changed the overall results.  I used a hardness of 100 for the samples since the lab said the results were normalized to a hardness of 100. I reran Penntox with the new criteria modifier of 0.9937 and received results of about 27 ug/l of Copper.  Below are my notes - so I don> '> t have to reinvent the wheel if this happens again.  Any comments would be appreciated.

> 
>         Tom, does the following make sense to you?  I didn> '> t bother to figure out how your numbers were calculated since I knew the data (total vs dissolved) was wrong.  ThanksDuncansville Copper WER
> 
> 
> Test Dates             Spiked Sample                EC50 Dissolved Copper as Cu

> 5/12 to 14/05       50.0% Eff/RW*               20.54 ug/l
> 5/12 to 14/05       Lab Water       33.90 ug/l
> 6/26 to 28/05       50.0% Eff/RW*               28.81 ug/l
> 6/26 to 28/05       Lab Water       17.65 ug/l
> * Site-water is simulated by mixing effluent with upstream water at design low-flow dilution; in this case 50:50.
> Note from lab indicates that samples have been normalized to a hardness of 100 mg/l.
> 
> The sample WER is the lesser of  (a) the site-water divided by the lab-water EC50 or (b) the site- water divided by the Species Mean Acute Value (SMAV) of 24 for this species, Ceriodaphnia dubis (appendix B of > "> streamlined WER guidance for Cu).  In this case, the SMAV comparison was more than the site-water comparison so site-water was used for the analysis.
>         [Barron, Thomas]                  lab-
>         a. Calculate the site water EC50  * site-water EC50
>              May 2005         20.54 *33.90 = 0.6058 > [Barron, Thomas]   (?results don't seem right - not expected? unless they insist they are correct?)
>              June 2005         28.81 * 17.65 = 1.63
> 
>              Geo Mean         << OLE Object: Microsoft Equation 3.0 >>  << OLE Object: Microsoft Equation 3.0 >> 0.6058 * 1.63    = 0.9937

>         [Barron, Thomas]
????                     ????
>         interim Geo Mean pending additional valid WER test results in place of May's questionable results.
>         b. Calculate site water EC50 * SMAV
>              May 2005         20.54 * 24 =  0.8558
>              June 2005         28.81 * 24 =  1.2004
> 
>              Geo Mean         << OLE Object: Microsoft Equation 3.0 >>  << OLE Object: Microsoft Equation 3.0 >> 0.8558 * 1.2004    = 1.013 > 0.9937    Use 0.9937 as WER
> 
>         2.  Criteria Maximum Concentration (CMC) for dissolved Cu via Chapter 16 considering hardness of 100 ug/l  =  13.44 ug/l:
> 
>              CMC = 0.960 * Exp(0.9422* ln[H]-1.700)  = 0.960e(0.9422 * ln[H] - 1.700)
> 
>              CMC (@ hardness = 100) = 0.960e (0.9422*ln[100] - 1.700)  = 0.960e (0.9422*4.605 - 1.700)
> 
>              CMC = 0.960 e 2.6389   =  13.44 ug/l
Chapter 16 says this should equal 13 [Barron, Thomas]    retain 13.44 throughout the calculations, as you indicate below.
> 
>         3.           Criteria concentrations for the site are the national criteria concentrations *  " final site WER" [Barron, Thomas]   pending additional / valid test results
> 
>              13.44 ug/l * 0.9937 =  13.35 ug/l dissolved Copper
>         [Barron, Thomas]   ??        ???
>         4.         Use a criteria modifier of 0.9937 in Penntox
> 
>         5.        Penntox calculated a hardness of 118 mg/l (stream = 147 and effluent = 100)
>              Penntox calculated average monthly Cu effluent limit

of 26.974 ug/l (Max daily of 42.084 ug/l)
> 			Penntox calculated Most Stringent WQBEL Criterion was based on AFC (acute) so the use of Chapter 16 CMC rather than CCC (criteria continuous concentration) is appropriate.
>
> 			Should Duncanville take another sample??? And we ignore the May sample??? [Barron, Thomas]  Yes.  They need to do another set of tests to replace May's results.
>
>
> 				-----Original Message-----
> 				From: 		Barron, Thomas
> 				Sent: 		Friday, May 11, 2007 3:34 PM
> 				To: 		Newcomer, Crystal;
'Trulear.Brian@epamail.epa.gov'
> 				Cc: 		Desai, Sunil V; 'Denise P. Hakowski'
> 				Subject: 		RE: Duncansville WER (square root symbols didn't copy correctly)
>
> 			Based on the results provided in the Duncansville WER Report, and according to my calculations, the total copper WER should be 0.7833 rather than the answer given below (0.5479) in # 3.  I had a different geo mean for the Lab-water EC50's.  I had 38.80 instead of 55.456.
>
> 			I am not sure where the calculations, ratios, criteria modifiers are coming from in questions # 4 & 5 below.
>
> 			Please contact me if you have any questions or if you wish to discuss any of this in more detail.
>
> 				Thanks!
> 				Thomas A. Barron , Chief
> 				Standards Section
> 				Div. of Water Quality Standards
> 				Bureau of Water Standards & Facility Regulation
> 				Ph: 717-787-9614 	- 	FAX: 717-772-3249
>
> 				P.S. Please note that my email address is
tbarron@state.pa.us
>
> 				+ + + + + + CONFIDENTIALITY 	NOTICE + + + + + + The information contained in this email may be confidential and/or privileged. This email is intended to be reviewed by only the individual(s) or organization(s) named above. If you are not the intended recipient or an authorized representative of the intended recipient, you are hereby notified that any review, dissemination or copying of this email and/or its attachments, if any, or any other information and/or reference(s) contained herein, is prohibited. If you have received this email in error, please immediately notify the sender by return email and delete this email from your system.
>
>
> 				-----Original Message----->
> 				From: 		Newcomer, Crystal
> 				Sent: 		Thursday, May 10, 2007
10:23 AM
> 				To:
'Trulear.Brian@epamail.epa.gov'
> 				Cc: 		Barron, Thomas; Desai, Sunil
V
> 				Subject: 		Duncasville WER (square
root symbols didn't copy correctly)
>
>
> 				Duncansville Copper WER
>
> 				I think the answers to your 3 questions
are:
> 				The 2.26 modifier came from #

4 and 5 below
> I believe the 27.145 ug/l was
from an old Penntox model and should be ignored.
> We used Total Copper, not
dissolved, as I originally thought.
> Given this, I still think our
calculations are wrong.  See # 3 below.  Any advise would be greatly
appreciated.
>
>
> Test Dates          Spike Sample          EC50 Total Copper as Cu

> 5/12 to 14/05       50.0% Eff/RW              22.65 ug/l
> 5/12 to 14/05       Lab Water        52.33 ug/l
> 6/26 to 28/05       50.0% Eff/RW              40.80 ug/l
> 6/26 to 28/05       Lab Water        28.77 ug/l
>
>
> 1. Find geometric mean of EC50 for site water
>
>                                  << OLE Object: Microsoft Equation 3.0 >>
<< OLE Object: Microsoft Equation 3.0 >> 22.65 * 40.8        =   30.39 ug/l
>
>
>                                  2.  Criteria Maximum Concentration (CMC)
for Cu via Chapter 16 considering hardness of 118 (Ed> '> s calculation)  =
13.44 ug/l
>
>                                  3.  The sample WER is the lesser of  (a)
the site water divided by the lab water EC50 or (b) the site water divided by
the Species Mean Acute Value (SMAV) of 24 for this species.  In this case, the
SMAV comparison was more than the lab-water comparison so lab-water was used
for the analysis.
>
>                                          SMAV:   30.39/24 =
1.26625
>
>                                          Lab-water     << OLE Object:
Microsoft Equation 3.0 >>  << OLE Object: Microsoft Equation 3.0 >> 52.33 *
28.77   =   55.456      30.39/55.456  =  0.5479
>
>                                  Brian, this step (3) doesn>
'> t seem to fit in with anything we did.
>
>                                  4.   Water Effect Ratio of EC50 to CMC
30.39/13.44  =  2.26   ratio
>
>                                  5.   Enter 2.26 as criteria modifier in
Penntox
>
>                                  6.   Penntox calculates WQBEL for Total Cu
to be 61.348 ug/l
>
>
>

| "Newcomer, Crystal" &lt;cnewcomer@state.pa.us&gt; 05/15/2007 01:20 PM | To | "Barron, Thomas" &lt;tbarron@state.pa.us&gt;, Brian Trulear/R3/USEPA/US@EPA |
| | cc | "Desai, Sunil V" &lt;sdesai@state.pa.us&gt;, Denise Hakowski/R3/USEPA/US@EPA |
| | bcc | |
| | Subject | RE: Duncansville WER (square root symbols didn't copy correctly) |

History:     🗘 This message has been forwarded.

Brian, I have redone most of the Duncanville WER as described below. Since Chapter 16 has dissolved Cu, I used Duncansville's dissolved results, which changed the overall results. I used a hardness of 100 for the samples since the lab said the results were normalized to a hardness of 100. I reran Penntox with the new criteria modifier of 0.9937 and received results of about 27 ug/l of Copper. Below are my notes - so I don't have to reinvent the wheel if this happens again. Any comments would be appreciated.

Tom, does the following make sense to you? I didn't bother to figure out how your numbers were calculated since I knew the data (total vs dissolved) was wrong. ThanksDuncansville Copper WER

| Test Dates | Spiked Sample | $EC_{50}$ Dissolved Copper as Cu |
|---|---|---|
| 5/12 to 14/05 | 50.0% Eff/RW* | 20.54 ug/l |
| 5/12 to 14/05 | Lab Water | 33.90 ug/l |
| 6/26 to 28/05 | 50.0% Eff/RW* | 28.81 ug/l |
| 6/26 to 28/05 | Lab Water | 17.65 ug/l |

* Site-water is simulated by mixing effluent with upstream water at design low-flow dilution; in this case 50:50. Note from lab indicates that samples have been normalized to a hardness of 100 mg/l.

The sample WER is the lesser of (a) the site-water divided by the lab water $EC_{50}$ or (b) the site-water divided by the Species Mean Acute Value (SMAV) of 24 for this species, *Ceriodaphnia dubis* (appendix B of "streamlined WER guidance for Cu). In this case, the SMAV comparison was more than the site-water comparison so site-water was used for the analysis.

a. Calculate the site water $EC_{50}$ ÷ site-water $EC_{50}$

| May 2005 | 20.54 ÷ 33.90 = 0.6058 |
|---|---|
| June 2005 | 28.81 ÷ 17.65 = 1.63 |

Geo Mean            0.6058 * 1.63    = 0.9937

b. Calculate site water $EC_{50}$ ÷ SMAV

| May 2005 | 20.54 ÷ 24 = 0.8558 |
|---|---|
| June 2005 | 28.81 ÷ 24 = 1.2004 |

Geo Mean            0.8558 * 1.2004    = 1.013 > 0.9937    <u>Use 0.9937 as WER</u>

2. Criteria Maximum Concentration (CMC) for _dissolved_ Cu via Chapter 16 considering hardness of 100 ug/l = 13.44 ug/l:

$$CMC = 0.960 * Exp(0.9422 * \ln[H] - 1.700) = 0.960e^{(0.9422 * \ln[H] - 1.700)}$$

$$CMC_{(@\ hardness = 100)} = 0.960e^{(0.9422 * \ln[100] - 1.700)} = 0.960e^{(0.9422 * 4.605 - 1.700)}$$

$$CMC = 0.960\ e^{2.6389} = 13.44\ ug/l \quad \text{Chapter 16 says this should equal 13}$$

3. Criteria concentrations for the site are the national criteria concentrations * final site WER

   13.44 ug/l * 0.9937 = 13.35 ug/l dissolved Copper

4. Use a criteria modifier of 0.9937 in Penntox

5. Penntox calculated a hardness of 118 mg/l (stream = 147 and effluent = 100)
   Penntox calculated average monthly Cu effluent limit of 26.974 ug/l (Max daily of 42.084 ug/l)

   Penntox calculated Most Stringent WQBEL Criterion was based on AFC (acute) so the use of Chapter 16 CMC rather than CCC (criteria continuous concentration) is appropriate.

Should Duncanville take another sample??? And we ignore the May sample???

-----Original Message-----
**From:** Barron, Thomas
**Sent:** Friday, May 11, 2007 3:34 PM
**To:** Newcomer, Crystal; 'Trulear.Brian@epamail.epa.gov'
**Cc:** Desai, Sunil V; 'Denise P. Hakowski'
**Subject:** RE: Duncansville WER (square root symbols didn't copy correctly)

Based on the results provided in the Duncansville WER Report, and according to my calculations, the total copper WER should be **0.7833** rather than the answer given below (0.5479) in # 3. I had a different geo mean for the Lab-water EC50's. I had 38.80 instead of 55.456.

I am not sure where the calculations, ratios, criteria modifiers are coming from in questions # 4 & 5 below.

Please contact me if you have any questions or if you wish to discuss any of this in more detail.

Thanks!

_Thomas A. Barron_ , Chief

Standards Section

Div. of Water Quality Standards
Bureau of Water Standards & Facility Regulation
Ph: 717-787-9614   -   FAX: 717-772-3249

**P.S.** Please note that my email address is *tbarron@state.pa.us*

-----Original Message-----
**From:**   Newcomer, Crystal
**Sent:**   Thursday, May 10, 2007 10:23 AM
**To:**   'Trulear.Brian@epamail.epa.gov'
**Cc:**   Barron, Thomas; Desai, Sunil V
**Subject:**   Duncasville WER (square root symbols didn't copy correctly)


Duncansville Copper WER

I think the answers to your 3 questions are:

The 2.26 modifier came from # 4 and 5 below

I believe the 27.145 ug/l was from an old Penntox model and should be ignored.

We used Total Copper, not dissolved, as I originally thought.

Given this, I still think our calculations are wrong.  See # 3 below.  Any advise would be greatly appreciated.


| Test Dates | Spike Sample | $EC_{50}$ Total Copper as Cu |
|---|---|---|
| 5/12 to 14/05 | 50.0% Eff/RW | 22.65 ug/l |
| 5/12 to 14/05 | Lab Water | 52.33 ug/l |
| 6/26 to 28/05 | 50.0% Eff/RW | 40.80 ug/l |
| 6/26 to 28/05 | Lab Water | 28.77 ug/l |

1. Find geometric mean of $EC_{50}$ for site water

<< OLE Object: Microsoft Equation 3.0 >>  << OLE Object: Microsoft Equation 3.0 >>
22.65 * 40.8      = 30.39 ug/l


2.  Criteria Maximum Concentration (CMC) for Cu via Chapter 16 considering hardness of 118 (Ed's calculation)  = 13.44 ug/l

3.  The sample WER is the lesser of  (a) the site water divided by the lab water EC

$_{50}$ or (b) the site water divided by the Species Mean Acute Value (SMAV) of 24 for this species. In this case, the SMAV comparison was more than the lab-water comparison so lab-water was used for the analysis.

SMAV:  30.39/24 =    1.26625

Lab-water    << OLE Object: Microsoft Equation 3.0 >>  << OLE Object: Microsoft Equation 3.0 >> 52.33 * 28.77   =   55.456      30.39/55.456 = 0.5479

Brian, this step (3) doesn't seem to fit in with anything we did.

4.  Water Effect Ratio of $EC_{50}$ to CMC      30.39/13.44 = 2.26  ratio

5.  Enter 2.26 as criteria modifier in Penntox

6.  Penntox calculates WQBEL for Total Cu  to be 61.348 ug/l

"Newcomer, Crystal"
<cnewcomer@state.pa.us>

05/10/2007 10:23 AM

To   Brian Trulear/R3/USEPA/US@EPA

cc   "Barron, Thomas" <tbarron@state.pa.us>, "Desai, Sunil V"
     <sdesai@state.pa.us>

bcc

Subject   Duncasville WER (square root symbols didn't copy correctly)

History:          ⤷ This message has been forwarded.

Duncansville Copper WER

I think the answers to your 3 questions are:
    The 2.26 modifier came from # 4 and 5 below
    I believe the 27.145 ug/l was from an old Penntox model and should be ignored.
    We used Total Copper, not dissolved, as I originally thought.
Given this, I still think our calculations are wrong.  See # 3 below.  Any advise would be greatly
appreciated.


Test Dates      Spike Sample    $EC_{50}$ Total Copper as Cu
5/12 to 14/05   50.0% Eff/RW    22.65 ug/l
5/12 to 14/05   Lab Water       52.33 ug/l
6/26 to 28/05   50.0% Eff/RW    40.80 ug/l
6/26 to 28/05   Lab Water       28.77 ug/l


1. Find geometric mean of $EC_{50}$ for site water


        22.65 * 40.8      = 30.39 ug/l


2.  Criteria Maximum Concentration (CMC) for Cu via Chapter 16 considering hardness of 118
(Ed's calculation)  =  13.44 ug/l

3.  The sample WER is the lesser of  (a) the site water divided by the lab water $EC_{50}$ or (b) the
site water divided by the Species Mean Acute Value (SMAV) of 24 for this species.  In this case,
the SMAV comparison was more than the lab-water comparison so lab-water was used for the
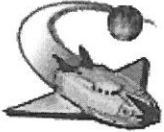analysis.

    SMAV:  30.39/24 =    1.26625


    Lab-water              52.33 * 28.77   =  55.456     30.39/55.456 = 0.5479

    Brian, this step (3) doesn't seem to fit in with anything we did.


4.   Water Effect Ratio of $EC_{50}$ to CMC         30.39/13.44 = 2.26  ratio

5. Enter 2.26 as criteria modifier in Penntox

6. Penntox calculates WQBEL for Total Cu to be 61.348 ug/l

**Brian Trulear/R3/USEPA/US**
04/27/2007 12:42 PM

To  Denise Hakowski/R3/USEPA/US@EPA

cc

bcc

Subject  Fw: Duncansville copper WER results

Denise

PADEP's answers to our questions are below.  I asked Crystal to fax me the report summary and the PENTOXSD results to verify the Cu criteria used.  I'll forward to you when I get it.  Assuming the criteria used is correct, is this info sufficient to make final comments on the WER calculations?  Let me know what else you need.

Thanks,
Brian

----- Forwarded by Brian Trulear/R3/USEPA/US on 04/27/2007 12:37 PM -----

**"Donoughe, Michael"**
**<mdonoughe@state.pa.us>**
04/26/2007 01:46 PM

To  "Newcomer, Crystal" <cnewcomer@state.pa.us>

cc  "Barron, Thomas" <tbarron@state.pa.us>, Brian Trulear/R3/USEPA/US@EPA

Subject  RE: Duncansville copper WER results

Crystal,
I talked to Jim Grove the plant operator,  They were in normal operation on those dates.  Flows were down May 8 & 9 0.38 & 0.39 MGD Monthly average was 0.42MGD.  Flows for June 21 & 22 were 0.37 & 0.34 MGD, the monthly average was 0.37 MGD.  There was no rain on any of those days.
If you need any more information let me know.
Mike

-----Original Message-----
From: Newcomer, Crystal
Sent: Thursday, April 26, 2007 10:26 AM
To: 'Trulear.Brian@epamail.epa.gov'
Cc: Barron, Thomas; Donoughe, Michael
Subject: FW: Duncansville copper WER results

My answers are below.  I can send Pentox results and the report summary if I get your fax number.

-----Original Message-----
From: Trulear.Brian@epamail.epa.gov
[mailto:Trulear.Brian@epamail.epa.gov]
Sent: Wednesday, April 18, 2007 3:30 PM
To: Cnewcomer@state.pa.us
Subject: Fw: Duncansville copper WER results

Crystal,

I shared the Duncansville WER info with our water quality specialist. Without a full WER report, we have some clarification questions  as to whether the samples used were appropriate.  The questions are:

(1) Was the plant operating normally (or better) at the time of the sampling? Hopefully, Mike can respond.  The sampling was done May 8 and 9, 2005 and June 21 and 22, 2005.

(2) Were stream conditions normal (i.e., relatively dry conditions, not a lot of non-point source contributions)? Yes, from what I can tell, they waited for dry weather.
(3) Is 50% the low flow dilution ratio used for steady state modeling calculations? If I understand this question correctly, the answer is yes.
(4) Did the lab normalize the lab water and site water to the same hardness? The lab (Aquatic Lab Services, Roger Zirk  610-666-1011) normalized the site and lab water to a hardness of 100 mg/l.
(5) Did they do total recoverable or dissolved (this summary indicates "total" but Ed mentions "dissolved" in the cover e-mail)?  It looks like they did both total and dissolved, but our calculations are based on total.

As far as the calculations themselves, they did not mention which species was used, but based on the SMAV, we assume Ceriodaphnia. Yes, Ceriodaphnia dubia.  Also
assumed is a hardness of 100, because you used 24 as the SMAV.  All this considered, the WER is calculated correctly.  However, we are trying to understand how the 27.145 from PENTOXSD was calculated.  Granted, the state criteria is in dissolved, but even converting to total, and assuming a hardness of 100 (which is what they used for the SMAV), we did not get 27.145.  Should we not assume a 100 hardness?  And, if it is not 100, then the wrong SMAV was used.  Could you provide the PENTOXSD calcs that derived the criteria number?  I will send the Pentox modeling sheet to you; can you give me your fax number?  I will also send you the first 3 pages of the report.

And lastly, you are correct, you multiply the final WER to the criteria. An older version of the Streamlined WER guidance says divide, but the Interim WER guidance definitely says multiply.

With the answers to the above questions, we can hopefully do a more complete review.  Let me know if you have any questions.

Thanks,
Brian

----- Forwarded by Brian Trulear/R3/USEPA/US on 04/18/2007 03:06 PM -----

| | | |
|---|---|---|
| "Muzic, Edward" <emuzic@state.pa.us> | | To |
| | Brian Trulear/R3/USEPA/US@EPA | |
| 01/30/2007 10:45 AM | | cc |
| | "Newcomer, Crystal" <cnewcomer@state.pa.us> | |
| | | Subject |
| | Duncansville copper WER results | |

Hi Brian,        Crystal directed me to ask you your opinion on the analysis of the data of the Streamlined Copper Water Effects Ratio from Duncansville (PA 0032883). Since we no longer get support (or even a response for that matter) from our biologist in Central Office on this issue (as with the WETT), we are forced to figure out a result of this study. We were wondering if you had any experience in this issue and if you can give us any help and/or comments. Also, you will be getting the permit for review so we thought we could get this resolved now before we submit it to you.

Attached are the WER results and the calculations taken from the guidance. The "27.145 (ug/l) from PENTOXSD" is the modeled end of pipe limit.


<<Duncansville WER Results.doc>>
There are also results not listed in the attachment for "EC50 measured Copper as CuSO4" and "EC50 dissolved Copper as Cu".
I don't understand the reasons for these results.

Is this done right, up to the final calculations?
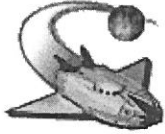Do you agree with Crystal's logic?

Any help, comments or any reply is appreciated.
Thanks
Ed
[attachment "Duncansville WER Results.doc" deleted by Brian Trulear/R3/USEPA/US]

Brian Trulear/R3/USEPA/US
04/18/2007 03:30 PM

To   Cnewcomer@state.pa.us
cc
bcc   Denise Hakowski/R3/USEPA/US@EPA
Subject   Fw: Duncansville copper WER results

Crystal,

I shared the Duncansville WER info with our water quality specialist.  Without a full WER report, we have some clarification questions  as to whether the samples used were appropriate.  The questions are:

(1) Was the plant operating normally (or better) at the time of the sampling?
(2) Were stream conditions normal (i.e., relatively dry conditions, not a lot of non-point source contributions)?
(3) Is 50% the low flow dilution ratio used for steady state modeling calculations?
(4) Did the lab normalize the lab water and site water to the same hardness?
(5) Did they do total recoverable or dissolved (this summary indicates "total" but Ed mentions "dissolved" in the cover e-mail)?

As far as the calculations themselves, they did not mention which species was used, but based on the SMAV, we assume Ceriodaphnia.  Also assumed is a hardness of 100, because you used 24 as the SMAV.  All this considered, the WER is calculated correctly.  However, we are trying to understand how the 27.145 from PENTOXSD was calculated.  Granted, the state criteria is in dissolved, but even converting to total, and assuming a hardness of 100 (which is what they used for the SMAV), we did not get 27.145.  Should we not assume a 100 hardness?  And, if it is not 100, then the wrong SMAV was used.  Could you provide the PENTOXSD calcs that derived the criteria number?

And lastly, you are correct, you multiply the final WER to the criteria.  An older version of the Streamlined WER guidance says divide, but the Interim WER guidance definitely says multiply.

With the answers to the above questions, we can hopefully do a more complete review.  Let me know if you have any questions.

Thanks,
Brian

----- Forwarded by Brian Trulear/R3/USEPA/US on 04/18/2007 03:06 PM -----

Hi Brian,
        Crystal directed me to ask you your opinion on the analysis of the data of the Streamlined Copper Water Effects Ratio from Duncansville (PA 0032883). Since we no longer get support (or even a response for that matter) from our biologist in Central Office on this issue (as with the WETT), we are forced to figure out a result of this study. We were wondering if you had any experience in this issue and if you can give us any help and/or comments. Also, you will be getting the permit for review so we thought we could get this resolved now before we submit it to you.

        Attached are the WER results and the calculations taken from the guidance. The "27.145 (ug/l) from PENTOXSD" is the modeled end of pipe limit.


   <<Duncansville WER Results.doc>>
There are also results not listed in the attachment for "EC50 measured Copper

as CuSO4" and "EC50 dissolved Copper as Cu".
I don't understand the reasons for these results.

Is this done right, up to the final calculations?
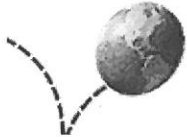Do you agree with Crystal's logic?

Any help, comments or any reply is appreciated.
Thanks
Ed
[attachment "Duncansville WER Results.doc" deleted by Brian
Trulear/R3/USEPA/US]

Denise
Hakowski/R3/USEPA/US
04/16/2007 11:00 AM

To   trulear.brian@epa.gov
cc
bcc
Subject   Comments on Duncanville WER

Hey Brian,

I looked at the analysis of the data, and I do have some questions.  As they did not provide the full report I have some questions as to whether the samples used were appropriate.  These questions:

(1) Was the plant operating normally (or better) at the time of the sampling?

(2) Were stream conditions normal (i.e., relatively dry conditions, not a lot of non-point source contributions)?

(3) Is 50% the low flow dilution ratio used for steady state modeling calculations?

(4) Did the lab normalize the lab water and site water to the same hardness?

(5) Did they do total recoverable or dissolved (this summary indicates "total" but Ed mentions "dissolved" in the cover e-mail)?

Getting all these out of the way, the calculations themselves are just a little confusing.  Starting at the end, as far as I know, Crystal is correct, you multiply the final WER to the criteria.  I don't know why the Streamlined WER guidance says divide (don't know why I never noticed it before), but the Interim WER guidance definitely says multiply.  I'll ask HQ what's up here.

Going back to the beginning, they did not mention which species was used, but based on the SMAV, I'm going to assume Ceriodaphnia.  I'm also going to assume that the hardness was 100, because they used 24 as the SMAV.  All this considered, the WER is calculated correctly.  However, where is the 27.145 from?  Granted, the state criteria is in dissolved, but even converting to total, and assuming a hardness of 100 (which is what they used for the SMAV), I'm not getting 27.145.  Should I not assume a 100 hardness?  And, if it is not 100, then they used the wrong SMAV.

I'll get an answer on the multiply vs. divide issue.  Once we have that, if they want to talk set something up.

D.